United States
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Service

**National Wildlife
Research Center**

# Research of Improved Assessment, Sampling, and Economic Methods for Wildlife Damage Management

*Contact Information:*
*Dr. Ray T. Sterner, Wildlife Services Research Psychologist*
*NWRC Headquarters*
*4101 LaPorte Avenue*
*Fort Collins, CO 80521*
*Phone: (970) 266-6170 FAX: (970) 266-6157*
*E-mail: ray.t.sterner@aphis.usda.gov*
*Web site: www.aphis.usda.gov/ws/nwrc*

## National Wildlife Research Center Scientists Perform Economic Analyses to Quantify the Benefits and Costs of Wildlife Damage Management

Wildlife Services' (WS) National Wildlife Research Center (NWRC) is the only Federal research organization devoted exclusively to resolving conflicts between people and wildlife through the development of effective, selective, and acceptable methods, tools, and techniques.

One difficult problem for the organization is how to quantify the benefits and costs of wildlife damage management methods and research. The scope of wildlife damage management activities continue to expand. Wildlife diseases, such as hantavirus and West Nile virus threaten people and livestock, while wildlife damage to natural resources like endangered species, pose new problems for assessment and analysis. The Government Performance and Results Act (GPRA) requires that the benefits and costs of WS and NWRC's activities be refocused to address agricultural losses prevented,
natural resources saved, information transferred, and patents granted. NWRC's goal is to develop and validate new techniques for assessing, sampling, and quantifying wildlife damage management activities in order to determine the related benefits and costs.

**Groups Affected by These Problems:**

- Wildlife Services managers
- State natural resource agencies
- Agricultural producers
- U.S. Citizens

**Major Research Accomplishments:**

- WS prepared simple computer spreadsheet code for projecting the direct benefits and costs of diverse chemical methods for managing select bird and rodent pests.
- WS developed decision-tree techniques for estimating outcome probabilities of benefits and costs in multi-year economic studies of wildlife damage management methods.
- NWRC researchers and WS personnel are working cooperatively to conduct a detailed cost-analysis study to determine how leg-hold trap and poison bans in several States are impacting the effectiveness of wildlife damage management.
- NWRC researchers and WS personnel are working cooperatively to conduct a study that analyzes the benefits and costs of predator management agreements that aid efforts to recover several endangered and threatened species.

## Applying Science and Expertise to Wildlife Challenges

**Benefits and Costs of Tools—**NWRC researchers are performing studies designed to yield estimates on the amount of time that is spent on capturing and managing wildlife using various techniques, such as leg-hold traps and neck snares. These estimated processes are crucial to the accurate cost analysis of WS activities.

**Wildlife Indexing and Damage Assessment Techniques—** Novel, easy-to-use, labor-saving techniques for indexing wildlife populations and wildlife damage to crops and resources are currently under development. Efforts are focused on variable-area estimations and raked-plot techniques. These indices are needed to allow economical, valid measures of management results as well as for the derivation of accurate compensation claims in States like Wisconsin.

**Species Valuations—**Researchers are developing archives of statute-based valuations of diverse wildlife species, such as coyotes, sea turtles, and plovers. Threatened and endangered species will be a central part of the archives. These valuations are crucial in determining the benefits and costs associated with wildlife damage management and threatened and endangered species protection efforts.

**Computer-Based Decision Making and Economic Projections—**NWRC researchers are using decision-tree, response-surface, and sensitivity analysis to aid WS managers in making damage-intervention decisions. These computer-based techniques will result in better decisions and improved policies for managing wildlife damage that are based on projected benefits and costs of undertaking the activity.

**Economics of Rodent Control in Swine Production Facilities—**An interdisciplinary working group of scientists from NWRC, academia, industry, and other government agencies are conducting an economic analysis of rodent damage and management at swine production facilities. This model allows users to predict the benefits and costs associated with house mouse damage and management. A Web site on rodent management (http://rodent.swine.unl.edu/stella/stella.html) was established to promote use of the model, increase producer awareness of the costs associated with rodent damage, and provide information on integrated strategies for managing rodents at swine-rearing facilities.

**Selected Publications:**


- Engeman, R.M., M.J. Pipas, K.S. Gruver, J.Bourassa, and L. Allen. 2002. Plot placement when using a passive tracking index to simultaneously monitor multiple species of animals. Wildlife Research 29:85-90.
- Sterner, R.T. 2002. Spreadsheets, response surfaces, and intervention decisions in wildlife damage management. In L. Clark (ed.), Human Conflicts with Wildlife: Economic Considerations. Colorado State University, Fort Collins, CO.
- Engeman, R.M. and R.T. Sterner. 2002. A comparison of potential labor-saving sampling methods for assessing large mammal damage in corn. Crop Protection 21:101-105.